

B.Tech (Biotechnology) 4<sup>th</sup> year

Course Code: 11B1WBT834

MAX. MARKS: 25

Course Name: Genetic Counseling

Course Credits: 03

MAX. TIME 1.5 hrs

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

- Q1: a) How does a genetic counselor identify mitochondrial based maternally inherited deafness in a family?  
 b) What are the guidelines for a genetic counselor for counseling to families in which an autosomal dominant Alzheimer disease (AD) gene is a possibility?  
 c) 24% of the individuals are recessive homozygous for a certain trait. In a population of 20,500, calculate the % of homozygous dominant individuals and heterozygous individuals. [2+2+1] CO2
- Q2: a) Explain the mechanism of DNA vaccine and its ways of administration.  
 b) What are the steps involved in germ line therapy and risks associated with it? [2.5+2.5] CO3
- Q3: a) A man and a woman have been detected as heterozygous for a lethal genetic disorder that cause death around 3-4 months of age normally but may be delayed to nearly 2 years in some rare cases. Would you advise them to enter into matrimony? Would you recommend them to have children if the couple in case is already married? Justify your answer giving suitable reasons.  
 b) Migraine is dominant to the normal condition and gene responsible is autosomal. A couple's all the 5 children, 2 girls and 3 boys, suffer from migraine. One of the girl is married the normal man and wishes to ascertain the chances of her children also suffering from the condition. How will you guide her? [2.5+2.5] CO2
- Q4: a) What are the functions and requirements of genetic counselor? How does he proceed to do his work? Can he predict anything with certainty?  
 b) On what considerations would you infer whether a given disorder was due to a rare dominant or a rare recessive allele? Why is it more difficult to prepare pedigree diagrams for autosomal recessive traits than for autosomal dominant ones? [2.5+2.5] CO1
- Q5: a) Conduct a genetic counseling session for a Schizophrenia patient.  
 b) Parents with average intelligence may have a child with exceptional intelligence. Is it possible? Justify your answer. [2.5+2.5] CO4